Exploring pathways of agroecology transition through gaming approach in the northwestern uplands of Cambodia

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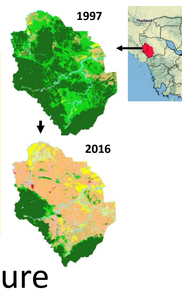
Background

- Dramatic land use and land cover changes (LUCC)
- Rapid transition of farming
- Different feedbacks on innovative techniques e.g. conservation agriculture (CA)



Methodology: Gaming approach with "Resilient Agriculture through co-Design of Agroecology pathways" (RADA game)

Integrating knowledge (LUCC, farming system, CA intervention project) to conceptualize game model

Co-designing RADA game (Prototyping and testing)

Using RADA game (3 CA and 3 non-CA villages)

R1 (2000) — R2 (2005) — R3 — R4 (2010) — R5 — R6 (2015)

Replay the history of the area with 8 farmers (2 from each farm type) in each village

An example of board game results from Chi Pang village, Plov Meas commune

6 rounds played systematically over 5 hours:

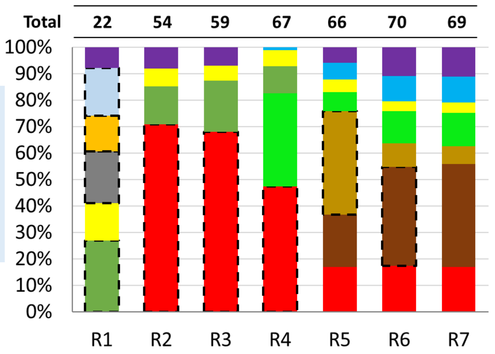
- Round 1: peanut and soybean
- Round 2: start of maize
- Round 3: maize boom
- Round 4: CA project >2010
- Round 5: cassava boom and orchard > 2013
- Round 6: diversification > 2016
- Round 7: Project of round 6

Results

Changes of land uses

Changing from diversified to homogenous landscape:

Soybean/Peanut -> Maize -> Cassava -> Mango



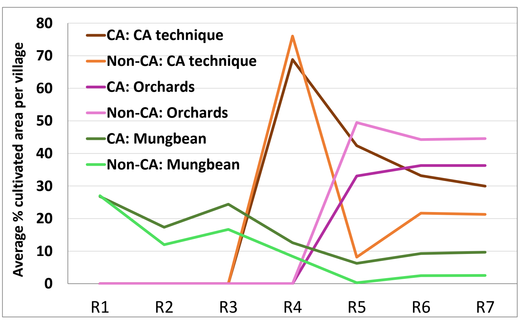
Impact indicators

	R1	R2	R3	R4	R5	R6	R7
Capital accumulation (Million KHR)	1	7	75	127	183	246	246
Total cattle (head)	16	24	43	68	69	73	73
Return on investment (%)	328	229	144	153	140	112	111
Pesticides use (l-kg/ha)	0.0	3.3	5.5	4.6	4.3	11.5	12.3
Land degradation accumulation (%)	-1	-16	-30	-27	-43	-42	-41
Rain and market vulnerability	0.03	0.10	0.23	0.19	0.15	0.21	0.21

Rising economic and environ-mental risks

Innovation

CA villagers are more knowledge-able about soil con-servation



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Conclusions:

- Game supports collective learning and messages transfer
- Farmers remain in logic of boom crops, but having more cattle and off-farm
- Farmers are more willing to adopt innovations (more window opportunities for intervention)
- It is needed co-designing process for agroecological practices; improvement of social organization; and engagement of all other actors e.g. private sectors